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DESCRIPTIONS OF TABANIDAE PREVIOUSLY KNOWN FROM ONE SEX ONLY (DIPTERA).

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Each of the following descriptions is based on an individual specimen which is labeled with a reference to this publication.

Esenbeckia triangularis Philip

Male, 14 mm. 13 miles SE Acatlan, Puebla, Mexico, 4900 ft., 10 July 1952 (E. E. Gilbert and C. D. MacNeil). This specimen was compared with the holotype female by Dr. C. B. Philip and found to agree except for usual sex differences. The antennae are completely orange-red. The second palpal segment is extremely short and narrow, reddish brown, with black hairs and a few pale hairs. The face below the antennae is swollen and subshining; the beard is yellow. The yellow haired thorax is blackish on the dorsum but yellowish near the wing bases. All coxae and femora are blackish brown with the fore and middle femora showing some yellow apically; fore and middle tibiae and tarsi yellow and hind tibiae and tarsi reddish brown; hairs of legs mostly black but with some yellow hairs present. The wings are lightly infuscated and this becomes deeper in color in the vicinity of the first basal cell; the costal cell is deep yellow. The first three tergites are yellow, the first with a dark spot beneath the scutellum, the second with a dark inverted median triangle at the base with the point reaching about half way across the tergite, the third with a dark spot on the anterio-lateral margins; fourth and following tergites black with narrow pale posterior borders. All tergites with black and yellow hairs with most of the latter along the lateral margins and posterior borders. First three sternites yellow with mostly yellow hairs; remaining sternites black with mostly black hairs.

In Philip's (1954) key to *Esenbeckia* males, *triangularis* would key to couplet 52 which includes *incisuralis* (Say) and *incisuralis tinkhami* Philip. *E. triangularis* may be separated from both these forms by the very small palpi, swollen subshiny face, longer proboscis and predominantly black haired legs.

Chrysops flavida celata Pechuman

Male, 8 mm. Lakehurst, New Jersey, 16 June 1917 (L. B. Woodruff). Very much like the female except for the usual sex differences. Face, palpi, first two antennal segments and base of third yellow; annuli dark brown. Legs yellow except for apices of fore and hind tibiae which are brownish. Thorax greenish gray with brown stripes. Wing pattern as in the female and with outer margin of crossband somewhat sinuate. The abdominal pattern is the same as in the female but the dark markings are more accentuated than in most females.

The male of *celata* can be separated from *flavida* Wied. and subspecies *reicherti* Fairchild by the greenish thorax and additionally from *reicherti* by the more restricted apical spot, the dark area of the second tergite not flattened and the yellow of the second tergite not tinged with green. Of other related forms, it may be separated from *dimmocki* Hine by the yellow legs and greater extent of yellow on the abdomen, from *cursum* Whitney by the saturate crossband with a sinuate outer border and from *pubica* O.S. by the paler hind femora, broader apical spot and greater extent of yellow on the abdomen.

Chrysops flavida reicherti Fairchild

Male, 8 mm. Oneco, Manatee Co., Florida, 25 March 1955 (D. M. Anderson). The male of *reicherti* is easily associated with the female. It is distinguished from males of *flavida* Wied. collected at the same time by its darker color, greenish tinge of the abdomen which is most noticeable on the second tergite, flattened dark marking on the second tergite and greater extent of the apical spot. The thorax is dark yellow with dark brown stripes, The apical spot of the wing is very extensive and surrounds the hyaline triangle which does not reach the wing margin. The hyaline triangle appears as a circular spot in the first submarginal cell and is separated from the rest of the hyaline triangle by an infuscated area in the first posterior cell connecting the crossband and the apical spot; the balance of the hyaline triangle is restricted to portions of the second and third posterior cells. The first two anten-

nal segments are reddish brown, the third segment is dark brown with the annuli nearly black. The legs are pale reddish brown except the hind femora and tibiae which are dark reddish brown. The abdominal pattern is much like that of the female; the pale area of the second tergite has a distinct greenish tinge and the median dark marking is flattened so that it reaches only half way across the segment. The first two sternites are greenish yellow without markings, the third and fourth each have a large black median spot and the fifth and following sternites are black with a narrow pale posterior border.

Females of *reicherti* collected at the same time as the male have a more extensive apical spot than is found in most specimens studied from other localities. It is possible, therefore, that the male described above may have the apical spot more extensive than is usual in this sex.

Chrysops montana perplexa Philip

Female, 8 mm. Welaka, Florida, 1 May 1955 (H. E. Evans). The female of this form does not differ in any essential way from many *montana* O.S. studied except in the size of the apical spot which is very extensive. The apical spot surrounds the hyaline triangle which is reduced to a small circular spot in the first submarginal cell and a narrow stripe in the first, second and third posterior cells. The hyaline triangle reaches the wing margin only as a subhyaline area in the third posterior cell.

This specimen was kindly compared with the holotype male of *Chrysops montana perplexa* by Dr. C. B. Philip who found it differed only in sex characters. The black markings of the abdomen, both dorsally and ventrally, are less extensive than in the male but this reduction is the same as is found in typical northern females when compared with associated males.

Stenotabanus floridensis (Hine)

Male, 11.5 mm. W. Palm Beach, Florida, 10 March 1920. Head large, broader than thorax. First two antennal segments pale yellow with black hair; base of third antennal segment dark yellow, annuli black. Annulate portion of antennae distinctly shorter than basal portion; basal portion with a rounded dorsal angle but almost no trace of a dorsal excision. Second palpal segment pale yellow with white hair, almost cylindrical in shape, about two and one half times as long as wide and blunt at tip. Tip of frontal triangle brown; rest of frontal triangle, the area of the subcallus and genae pale gray pollinose with rather long white hair

on the genae. Vertical triangle gray, laterally compressed and reaching level of eye. Post ocular rim of eye with long gray hairs which curve forward. Upper eye facets enlarged and occupying about two thirds of eye area; line of demarcation between large and small facets distinct.

Thoracic stripes present but obscured by long gray and a few dark hairs which cover dorsum and lateral margins of thorax and scutellum. Pleurae gray with long gray hairs. Legs yellowish red with fore femora and most of fore tibiae and tarsi somewhat darker. All coxae with long white hairs; fore femora with mostly black hairs and middle and hind femora with mostly white hairs; all tibiae with black and white hairs which are quite long on the middle and hind tibiae. Wings hyaline; subepaulets bare.

Abdomen much like that of the female but with pale areas reduced in size; dark brown with a small yellowish gray median triangle on the first tergite, larger median triangles on the second and third tergites and only traces of such triangles on the fourth and following tergites. Oval sublateral pale spots which reach the posterior margin are present on the second, third and fourth tergites. Lateral margins of first tergite and posterior lateral margins of second, third and fourth tergites grayish. Abdominal hairs black except over the pale areas and extreme posterior and lateral margins where they are gray. Venter gray with gray hair.

Although the male of *St. floridensis* should be rather easily associated with the female, it also has a superficial resemblance to the males of *Tabanus pumilus* Macq., *T. sparus* Whitney and *T. sparus milleri* Whitney. The specimen of *St. floridensis* described above would be separated at once by the bare subepaulets but since this is a variable character in the female, it is possible it may be variable in the male also.

From the males of *T. pumilis*, *T. sparus* and *T. sparus milleri*, the male of *St. floridensis* may be separated by the long hairs on the post ocular rim, the gray pollinose subcallus which is brown in the species mentioned above, somewhat more slender second palpal segment, long white hairs on the thoracic dorsum and yellowish red femora.

Tabanus abdominalis Fabricius

Male, 20 mm. Highlands Hammock, Highlands Co., Florida, 10 May 1955 by H. E. Evans as prey of wasp *Bembix texana* (Cress.). The male of *T. abdominalis* is predominantly orange and black and readily associated with typical females of the species. First antennal segment black with black hair, second dark orange

with black hair and third completely orange-yellow with annuli shading to a deeper color. Upper eye facets somewhat enlarged and occupying slightly more than half of total eye area. Palpi black with black and a few yellowish hairs; second segment blunt at tip. Pollen and hairs of face and cheeks yellow; beard yellow. Stripes of thorax very distinct; pleural hairs mostly yellow but with patches of black hairs. Legs black except for basal one third of fore and basal two thirds of middle and hind tibiae; hairs of legs black except for long pale hairs on all coxae and some orange hairs on pale areas of tibiae. Color and markings of wing as in female; first posterior cell narrowly open at margin. Abdomen mostly orange with black markings on all tergites; black marking on first tergite restricted to a small spot beneath scutellum; second, third and fourth tergites with a rather small black median spot on the anterior border which reaches about half way across the segment and with a very small spot on the extreme antero-lateral margin which is larger on the fourth than on the second and third; on the fifth and sixth tergites the dark spots have coalesced to form a black band across the segment restricting the orange to a narrow posterior border which is broadest laterally. Abdominal hairs mostly black except laterally and along posterior margins of segments where they are yellow. On the second, third and fourth tergites the area of yellow hairs has a tendency to expand into faint mid-dorsal triangles. It is probable that with less perfectly preserved specimens than the one at hand, these would not be noticeable. First five sternites orange-yellow except for a very small black spot in the center of the lateral border on the third, fourth and fifth sternites; sixth sternite dark with a pale posterior margin; seventh sternite largely dark; hairs of venter mostly yellow.

T. abdominalis would key to couplet 15 in Stone's (1938) key to *Tabanus* males but would go no further since it does not agree with either choice of characters in the couplet. From *T. funipennis* Wied., which keys out in couplet 15, it is at once distinguished by the dark legs and palpi and by the dark median abdominal spots not forming a continuous stripe. Rubbed specimens of *T. gladiator* Stone and *T. sulcifrons* Macquart, which may not show the usual pale mid-dorsal abdominal triangles, do not have the wings as deeply infuscated, the femora are not as deeply black, the tibiae are more extensively yellowish, the thoracic stripes are not as distinct and in the case of *gladiator* the eye facets are not differentiated.

Tabanus coarctatus Stone

Male, 15 mm. Highlands Hammock, Highlands Co., Florida, 10 May 1955 by H. E. Evans as prey of the wasp *Bembix texana* (Cress.). The male of *T. coarctatus* is readily associated with the female. The thorax and wings are same as in the female as well as the dorsal and ventral abdominal pattern except that the pale markings are somewhat more extensive than in most females. The legs are pale reddish brown except for the tarsi which are brown. The antennae match those of the female in having the first two segments yellowish with black hairs and the third segment black except at the extreme base. The upper eye facets are enlarged but not markedly so and occupy over half of the total eye area; the line of demarcation between large and small facets is quite distinct. The pinkish white second palpal segment is unusual in that it is swollen at the base and tapers at the tip to an acute point which is somewhat decurved; the palpal hairs are white.

In Stone's (1938) key to male *Tabanus*, *T. coarctatus* would go to couplet 26. From all related species except *T. equalis* Hine, it would be separated by the combination of pale legs and black third antennal segment. From *equalis*, which is usually a larger species, it may be separated by the darker costal cell, paler scutellum, broader pale abdominal bands, almost completely black third antennal segment which has scarcely a trace of a dorsal excision and a stubby rather than slender terminal annulus. *T. equalis* seems to be the only other species in this group with the second palpal segment swollen at the base and an acute tip.

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